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EXAMINER	
HIRIYANNA, KELAGINAMANE T	
ART UNIT	PAPER NUMBER
1633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/731,379	CASTANEDO ET AL.	
	Examiner	Art Unit	
	KELAGINAMANE HIRIYANNA	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5,9,17-20,28 and 33-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,9,17-20,28 and 33-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on *05/19/2010* has been entered.

Applicant's response filed on *05/19/2010* in response to office action mailed on 01/19/2010 has been acknowledged.

Claims 5, 9, 17, 20, and 28 are amended.

Claims 1-4, 6-8, 10-16, 21-27, and 29-32 are canceled.

Claims 33-48 are new.

Claims 5, 9, 17-20, 28 and 33-48 *are pending and are examined in this office action.*

Applicants are required to follow Amendment Practice under revised 37 CFR §1.121. The fax phone numbers for the organization where this application or proceeding is assigned is ***571-273-8300.***

Claim Objections

Claim 9 is objected to because there is insufficient antecedent basis for "A homologous recombination vector". Proper claiming is "The homologous ..." because there is only one vector deposited there, not a bunch of different vector types deposited as one vector.

Claim 9 is objected to for reciting on line 6 “wild mice”. Instead use of a phrase such as “wild type control mice” or “control wild mice” is preferable in order to glean that a comparison is done under controlled conditions.

Claim 17 is objected to for not further limiting, as it does not require the mouse but the offspring because it reads on a cell from a non-mutant mouse, because “offspring" includes crosses with wild-type mice, and many subsequent generations.

Claim 20 is objected to for not further limiting, as it does not require the mouse but the offspring because it reads on a non-mutant mouse, because “offspring" in its breadth includes crosses with wild-type mice, and many subsequent generations.

Claim 33 is objected to for reciting on line 5 “wild mice”. Instead use of a phrase such as “wild type control mice” or “control wild mice” is preferable in order to glean that a comparison is done under controlled conditions.

Claims 5, 1-20, 28, and 34-42 are objected to for depending directly or indirectly from claim 33.

Claim 43 is objected to for reciting on line 13 “wild mice”. Instead use of a phrase such as “wild type control mice” or “control wild mice” is preferable in order to glean that a comparison is done under controlled conditions.

Claims 44 & 45 are objected to for depending directly or indirectly from claim 46.

Claim 46 is objected to for reciting on line 15 “wild mice”. Instead use of a phrase such as “wild type control mice” or “control wild mice” is preferable in order to glean that a comparison is done under controlled conditions.

Claims 47 & 48 are objected to for depending directly or indirectly from claim 46.

Double Patenting Warning

Applicant is advised that should claim 17 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Claim 18 requires the cell be isolated from a mutant mice with

mutated alleles of Sigma-1 receptor gene, however, such depends from depends directly from claim 17 (and indirectly from base claim 33 requires) the cells of the mutant mice be mutated in Sigma-1 receptor gene, therefore, despite a slight difference in wording, Claim 18 is a substantial duplicate of Claim 17.

Applicant is advised that should claim 17 be found allowable, claim 19 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The cell of claim 17 and 19 refer to same product "mutant" cell having the same properties including the ability to propagate and does not appear to change the structure from that of the parent in any way, (just requires propagation), therefore, despite a slight difference in wording, Claim 19 is a substantial duplicate of Claim 17.

Applicant is advised that should claim 17 be found allowable, claim 20 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Claim 20: same as Claim 17, but claims the whole mouse and reads on a heterozygous mutant which is crossed with a wild-type mouse, and gives

rise to a wild-type offspring in the subsequent generation(s), therefore, despite a slight difference in wording, Claim 20 is a substantial duplicate of Claim 17.

Applicant is advised that should claim 33 be found allowable, claim 20 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The transgenic mutant mouse of claim 20 and 33 refer to the same product "mutant mouse deficient in endogenous Sigma-1 receptor" product having the same structure and properties, therefore, despite a slight difference in wording, Claim 20 is a substantial duplicate of Claim 33.

Applicant is advised that should claim 20 be found allowable, claim 37 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The transgenic mutant mouse of claim 20 and 37 refer to the same product "an offspring of the mutant mouse of claim 33", therefore, despite a slight difference in wording, Claim 37 is a substantial duplicate of Claim 20.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recitation "non-human mutant mammal….compared to wild mice" makes the claim vague and indefinite. It is unclear how any non-human mutant animal other than a mutant mouse can be so compared.

Claims 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 40 is improperly dependent, it does not require the mouse of the parent claims (claim 33), and it is a different composition which is required to anticipate.

Claim 41 & 42 are rejected as they depend from a rejected base claim.

Claims 46 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recitation "mutant non-human mammal being homologous to said functional disruption" makes the claim vague and indefinite. It is unclear how an animal can be "homologus" to a gene disruption. Applicant should correct the same preferably to recite "homozygous" instead.

Claims 47 & 48 are rejected as they depend from a rejected base claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

"The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention."

Claim 9 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The scope of invention as claimed encompasses broadly a non-human mutant mammal having disruption in endogenous Sigma-1 receptor gene.

The specification at best teaches only a mutant mouse having a disruption in endogenous Sigma-1 receptor gene.

The application does not disclose any other non-human mutant mammalian species with disruption in said endogenous gene.

Applicant is referred to the guidelines for ***Written Description Requirement*** published January 5, 2001 in the Federal Register, Vol.66, No.4, pp.1099-1110 (see <http://www.uspto.gov>). The disclosure of a single species is rarely, if ever, sufficient to describe a broad genus, particularly when the specification fails to describe the features of that genus, even in passing. In analyzing whether the written description requirement is met for the genus claim, it is first determined whether a representative number of species have been described by their complete structure. Next, it is determined whether a representative number of species have been sufficiently described by other relevant identifying characteristics.

Since the specification fails to disclose any other non-human mutant mammalian species that has a disruption in endogenous gene that was generated, it is not possible to envision the broadly claimed mutant non-human mammals having a claimed mouse characteristic or said gene disruption. Therefore, the lack of disclosure in the specification is not deemed sufficient to reasonably convey to one skilled in the art that the applicants were in possessions of the huge genera recited in the claims at the time the application was filed. Furthermore the possession may be shown by actual reduction to practice, clear depiction of the invention in a detailed drawing, or by describing the invention with *sufficient relevant identifying characteristics* (as it relates to the claimed invention as a whole) such that a person skilled in the art would recognize that the inventor had possession of the claimed invention. Accordingly one of skill in the art would conclude that applicant was not in possession of the claimed genus because a

description of a single member of this genus would not be representative of claimed genus of compounds and is insufficient to support the claim in its present scope.

Claims 5, 9, 17-20, 28 and 33-48 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a transgenic mouse with a targeted disruption in the endogenous gene encoding the Sigma-1 receptor protein wherein a mouse homozygous for said disruption lacks detectable levels of endogenous sigma-1 receptor and wherein said homozygous transgenic mouse has a phenotype that is characterized by a statistical difference in hyperactivity response when compared to a wild type control mice, does not enable targeting any non-human mutant mammal for said gene disruption or a non-human mutant mammal with the phenotype of said transgenic mouse. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to: (1) The breadth of the claims; (2) The nature of the invention; (3) The state of the prior art; (4) The level of one of ordinary skill; (5) The level of predictability in the art; (6) The amount of direction provided by the inventor; (7) The existence of working examples; and (8) The quantity of experimentation needed to make or use the invention based of the content of the disclosure. In re Wands, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). All of the wands factors have been considered with regard to the instant claims, with the most relevant factors discussed below as to show that one of the ordinary skill in the art have to go through ‘’undue experimentation” in order to practice the invention.

Nature of the invention: The invention relates to Sigma receptor mutant non-human mammals, and a vector generating said mammals. Nature of the invention is such that one of skill in the art would find it ‘undue’ experimentation.

Breadth of the claims And Guidance of the Specification and The scope and breadth of the instant claims, read in the light of instant specification and the state of the art at the time of filing encompass vectors for generating a non-human mutant mammal with a targeted disruption in endogenous Sigma receptor-1 gene and obtaining non-human mutant mammals with said gene disruption has the mutant mouse phenotype characterized by hypermotility response as compared to a wild type control mouse. The dependent claims imply that base the claims include both homozygous and heterozygous mice for the disruption possess said phenotype

The scope of invention as claimed encompasses broadly a vector for generating a non-human mutant mammal having disruption in endogenous Sigma-1 receptor gene and further implies obtaining a non-human mutant mammal with said gene disruption bearing said mutant mouse characteristic of hypermotility as compared to a wild type mouse.

The specification however, only discloses evidences regarding a single example of a non-human mutant mammal, a mutant mouse with Sigma I gene disruption generated using conventional gene targeting vector for disrupting said gene in mouse and only the mutant mouse which is homozygous for the gene disruption possesses said phenotype, where as hetrozygote is equivalent to wild type mice. The only mentioned phenotypic difference between wild type mouse and the homozygous mutant mouse was with reference to a difference in hyperactivity activity assay. The application does not disclose any other non-human mutant mammalian species with disruption in said endogenous gene.

Specification does not enable any other mutant non-human mammals that are disrupted in the endogenous sigma receptor-1 genes. Specification does not describe any Sigma receptor-1 gene targeted or mutant non-human mammal possessing a significant phenotype that is related to the mutant mouse.

The specification thus fails to provide an enabling disclosure for the full scope and breadth of the invention as claimed. In the absence of representative examples of enabled non-human mutant mammals supporting the scope of the claim one of ordinary skill in the art would conclude that the claimed invention is unpredictable and would require an undue amount of experimentation to practice the invention in full scope as

claimed. The test is whether the species completed by applicants prior to the reference date or the date of the activity provided an adequate basis for inferring that the invention has generic applicability.

***State of the Art, the Predictability of the Art*:** At about the effective filing date of the present application art does not provide enablement for making a gene disrupted gene knockout mutant non-human mammal other than in mouse species. Gene targeting method and vector described for targeting a mouse Sigma I receptor gene as described in the instant invention is only enabled for generating a gene targeted mouse as no such targeting of other mutant non-human mammal has been achieved at the time of filing . Art is still unpredictable with regard to achieving a desired phenotype even in a mouse that is of substantial use or utility for example modeling human/non-human animal diseases or conditions. Holschneider et al. (Int J. Devl. Neuroscience 18:615-618, 2001; art of record), states that knocking out or insertion of a single gene may result in no phenotypic change. Even the conventional targeting approach, as is in the instant application, has limitations including functional redundancy of closely related proteins, induction of compensatory processes and early embryonic lethality (Holschneider et al., Int. J. Devl. Neuroscience 18:615-618, 2000; see p. 616, 1st col. 2nd paragraph; art of record). Art still remains unpredictable regarding generating a non-human mammal, other than mouse species, with a targeted disruption of a gene.

These claims are not enabled because one of skill in the art would not be able to produce any non-human mutant mammals using the conventional technology used for mice species, and further, one would not be able to predictably use these mutant non-human mammals for any substantial use. One of skill in the art would not be able to rely upon the state of the art in order to produce a gene targeted Sigma 1 mutant non-human mammal other than the mutant mice. Accordingly, in view of insufficient teachings or guidance and the lack of representative enabled examples provided by the specification for the claimed scope that encompasses targeted disruption in any and/or all non-human mammals, the invention as instantly claimed is not enabled. Still further the as filed specification is not enabled to overcome the art-recognized unpredictability regarding the technology to generate targeted gene disruptions in non-human mammals

other than for mouse. Hence, it would have required undue experimentation for one of skill in the art to make and use the claimed invention in its full scope.

Response to Applicants arguments of 05/19/2010:

The Applicant amends the base claim and argues that with the amendments the claims over come 35USC112 1stparagraph enablement rejection.

The Applicants arguments are however found not persuasive because as indicated in the rejection claim 9 for example still encompasses using the targeting vector to derive a gene disrupted animal from any and/or all species of non-human mammals. Further the several dependent claims imply that the base claim includes both the heterozygous and homozygous mutant mice as possessing the indicated phenotype. There is no support for heterozygous mice expressing a distinct phenotype than that of a wild type control. Still further any offspring of said mouse is not enabled as the nature of the offspring depends on the genotype of the mating partners. Only enabled are a fraction of its offspring that predictably possess said homozygous gene disruption. Hence the rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9, 43-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capecchi (U.S. Pat. No.5, 464,764; art of record) in view of Seth et al.,(2000, Biochemical and Biophysical Research communications 241: 535-540; art of record).

The claims are drawn to a process of making a mutant mouse by targeting a disruption in the mouse endogenous Sigma receptor-1 gene using a gene and to a gene targeting vector.

Capecchi teaches a vector to be used to produce knockout (gene disrupted) mouse. In particular Capechi teaches that a targeting vector has a first and a second segments of homologous DNA sequence, and a positive selection marker between the two homologous sequences. See Figure 1. Furthermore, they teach various markers that can be used in these vectors (Table 1. col.7-8). They teach that these vectors can then be used to produce transgenic animals, wherein ES cells are the target cells (Col. 15, lines 59-67), wherein the vector can then be introduced into the ES cells by electroporation or microinjection. These transformed ES cells can then be combined with a blastocysts and then grown and contribute to the germ line of the resulting chimeric animal (Col. 16, lines 1-10). They teach that cell lines from the animals can then be used to characterize gene function, or be used in assays (Col. 12-13, bridging paragraph). Capecchi clearly show that these vectors and methods can be used to determine the biological function of any known gene of interest. Capecchi however, does not teach the sequence for Sigma receptor gene.

Seth teaches that cDNA sequence of Sigma I receptor (Abstract, p.536), a known sequence that would fulfill the limitations of the claims, because this sequence would be considered homologous to at least a portion of the endogenous Sigma receptor gene (p.538 and Figure 2).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the instant invention to modify the homologous sequences in targeting vectors as taught by Capecchi with segments of DNA sequence for Sigma I receptor by isolating and using the genomic segments for the Sigma-1 receptor cDNA taught by Seth and to make a targeting construct and use said construct to generate a gene disrupted mouse, and further breed them to generate a homozygous gene disrupted mouse where the genome of the mouse comprises a homozygous disruption of a Sigma receptor I gene where in said mouse lacks detectable level of said receptor. One would have been motivated use the method making a targeting vector and for producing mice having a homozygous disruption of sigma receptor gene as they may provide a disease model for investigating the art described diseases or conditions associated with sigma receptors malfunctions. One would have a reasonable expectation of success of

making and using Sigma receptor gene disrupted mouse as prior art fully provides the requisite teaching, suggestion and motivation to make and use a gene disrupted mouse. Thus, the claimed invention was *prima facie* obvious.

Response to Applicants arguments of 05/19/2010:

The Applicant argues that with the amendments the claims amended overcome the obviousness rejections of record as set forth in the office action mailed on 01/19/2010. In particular the Applicant argues that making a gene targeting vector and the method of gene targeting as espoused by Capecchi and Seth references.

The Applicants arguments are however, found not persuasive because the Applicants gene targeting vector construction as well as the method of gene targeting strictly follows the patented method of Capecchi. Thus substituting the first and second gene segments of gene to be targeted as taught in Capecchi with the established segments of Sigma-1 receptor as taught by Seth in Capecchi's vector is clearly following a well established protocol of the prior art. Further the method of using said gene targeting vector for targeting an endogenous gene, screening for the positive ES cell clone, and breeding for a positively targeted mouse completely follows well established prior art protocol of Capecchi. Hence the method or the process of making instant Sigma-1 receptor gene disrupted mouse as described in the Application are again clearly obvious to one of skill in the art. The only aspect of this method that is not obvious a priori is the end product, i.e., the phenotype of transgenic mouse generated that could be of a substantial use in drug discovery etc. The gene disruption could be embryonic lethal, it could be lethal at different steps of early or late development. If not developmentally lethal, the adult targeted mouse may possess an expected overt phenotype or a no-overt phenotype etc. The transgenic animal so obtained is patentable, if it could be shown, that the transgenic animal so obtained is of credible, specific and/or of substantial utility or of a well established utility. Further the dependent claims imply that the base claim includes both the heterozygous and homozygous mutant mice as possessing the indicated phenotype. There is no support for heterozygous mice expressing a distinct phenotype than that of a wild type control.

Since gene targeting method is established, obtaining said hetrozygote with gene disruption is clearly obvious from the prior art. The Applicant further should note that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. Since the method followed for making the vector construct and the method followed in targeting to obtain the gene disrupted mouse of the instant invention follows the method that is well established in the prior art the invention as instantly claimed is clearly obvious. Hence the rejection is maintained.

Conclusion:

No claim allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Kelaginamane Hiriyanna Ph.D.,* whose telephone number is **(571) 272-3307**. The examiner can normally be reached Monday through Thursday from 9 AM-7PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Joseph Woitach Ph.D.,* may be reached at **(571) 272-0739.** The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). When calling please have your application serial number or patent number, the type of

document you are having an image problem with, the number of pages and the specific nature of the problem. For all other customer support, please call the USPTO call center (UCC) at (800) 786-9199.

/Robert M Kelly/

Primary Examiner, Art Unit 1633